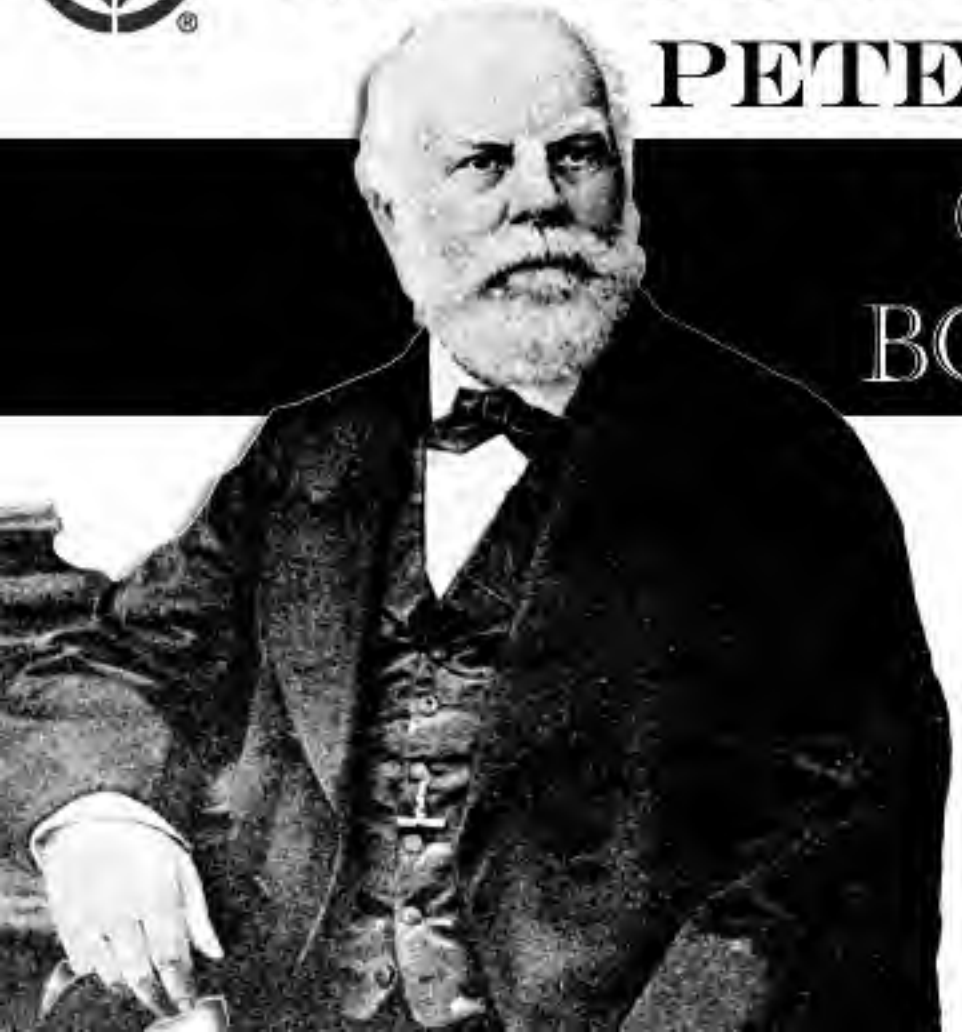
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Rec'd May 23
Ans

Athens Ill. May 21st 1874

Dear Engelmann

Your with Leav Recd thanks
I is not quite so good a one as
I lost the field is smaller & the
Single lens magnifies less.
I Enclose $2.00 the cost. owed
am much obliged for your trouble
The Austin cedar I was all the time
convinced was the western plant but
I did not know there was really Specific
difference That Juniperus Virginiana
Call oliviaeformis which I
Consider a hybrid J. alba - macrop
grows quite near one but a Single tree
on my brothers farm & I have had time
to Spare it
hybridity or
unequally
characters
the evidences of its
plainly manifest in the
developed parental
the fruit & buds & form

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of leaf will find representatives in
alba - the pubescence of macrocarpa
is not uniformly distributed as in true
species but is to some extent in pat-
ches & thin or dense on some leaves
macrocarpa gives rise to fruit
pubescence to leaves size &c and
largely to the form of the growing tree
and a strong special evidence of it is
that in a growing tree about the
size & age of numerous 2 macrocarpas
that formerly grew around it
and there common origin seems
quite probable from that circumstance

Respectfully Jour

E. J. Hall

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Rec'd July 18
Ans'd AC same day

Athens Ill. July 17th 1876

Dear Engelmann

Your paper (& Card) on Agave
and Quercus Rod a week ago
Many Thanks I have now read them
carefully, especially the one on Oaks
and feel obliged to dissent
from the view you take of my
hybrid and also of Q heterophylla
I cannot but regard both as
hybrids both having the character-
-istics of what seems to me 2
distinct parents easily discover-
-able in the Progeny 2 V. heterophylla
Certainly occurs only under circums-
-tances favorable to a hybrid production
from 2 Phellos & 2 falcata which
I have no doubt will be found to be
its true parents. which 2 nigra
tinctoria &c with 2 imbricaria produce

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the numerous northern forms that we frequent-
met in young woods where there
varieties abound. as parent trees
as tridentata. Texana &c
I send you by to days Mail a Package
from my hybrid. the flowering
Specimens you asked for last Spring
(which I suppose come now too late)
the scaly bark from the larger limbs
& some fresh leaves that will show
you unequal distribution of pubesce-
nce beneath. this I claim to be true
of all hybrids whilst the opposite is
true of all true Species - that is
that the parental characters will be
in hybrids not uniformly developed
but that one or the other of the parents
will be more developed in some parts
than in others of the hybrid individual
the forms of oak leaves are even in
true Species too diverse to be of much
account in Specific or varietal distin-

-etion. Even the entire Leaved Species
as You Say are inconstant I have
found young imbricaria, here with
large toothed Leaves & no trace
of hybridity. but there are other
things to be Seen in living Specimen
that is unmistakable. as for instance
the thin Scaly (white oak) bark I send
You, no tree Q macrocarpa ever
produced such Bos for as I have able
to observe. the whitish limbs Just as
in young white oaks with Smooth Clear
bark. until with age the Scales appear
while macrocarpa is discoursable in
the trunk where the bark agrees well
enough with that Species any intelli-
-ent observer not a botanist would
Say of the tree "the limbs & bark above
are white oak the leaves and acorns are
a form of the white oak. but the trunk
is more like a bur oak"
istic- I wish You had extended Your paper

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to a monograph of the genus in this
County it coould have been of
great value - I cannot discover
what disposition you make of
Buckleys Quercus Durandii & Texas
v Louisiana unless you unite it
with Jour Polymorphus undulata
which is Probable

Jour J Agave paper is of
less interest to me having but
2 or 3 of the Species
Journ dry

Elihu Heall

Please ask me for anything that
I know that will be useful to Jou

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EDITORIAL JOTTINGS.

In a recent trip through Southern Illinois we made a few botanical notes, which we give our readers. The low bottom lands near the Ohio and Mississippi rivers are heavily timbered. One of the commonest trees is the American or White Elm (*Ulmus Americana*, L.) This has just passed the flowering stage. The Red Maple (*Acer rubrum*, L.) occurs frequently, and is also just out of flower. The Sweet Gum (*Liquidambar*) is abundant in many localities, a large number of the prickly fruit-balls still remain upon the tree. That vegetable thief, the Mistletoe (*Phoradendron flavescens*, Nutt.), seems to have a particular attachment to the Elm trees, occurring much more frequently on them than on any other tree. It grows also on the Sycamore (*Platanus occidentalis*, L.), on the Red Maple (*Acer rubrum*, L.), on the Black Gum (*Nyssa multiflora*, Wang.), and on some other trees. Some large Elms seemed loaded with this parasite, a hundred or more bunches growing upon one tree. These masses of yellowish-green vegetation give the trees a peculiar appearance.

In many cases the small branches of the Sweet Gum were covered with broad corky ridges; sometimes this occurred only on the lower limbs, and in other cases all the branches were free from the excrescence. These corky ridges are much like those which occur on the Winged Elm (*Ulmus alata*) which also grows in the same places.

On rocky ledges at Cobden we found old fronds of some interesting ferns, viz.: *Cheilanthes vestita*, Swartz, *Polypodium incanum*, Swartz, *Asplenium ebeneum*, Ait., and *Asplenium trichomanes*, L. Old stalks were also abundant of the False Aloe (*Agave Virginica*, L.) This plant sends up a large and pretentious stalk, but its flowers are insignificant. Patches of the small cane (*Arundinaria tacta*, Muhl.) were frequently visible, and at first sight might be mistaken for small willow bushes. The low and swampy grounds are everywhere becoming verdant with extensive patches of the Copper-colored Iris (*Iris cuprea*, Pursh).

Many other rare plants occur in this region, of which we shall probably have occasion to speak hereafter.

MANY plants could not be perpetuated but for the agency of insects, and especially of bees; and it is remarkable that it is chiefly those which require the aid of this intervention that have a nectarium and secrete honey.

NOTES FROM CORRESPONDENTS.

We have the following notes from Mr. E. Hall, of Menard county, Ills., and commend his inquiries and observations to the attention of our readers:

Ground Nut—(*Apios tuberosa*, Mœnch).—Will the readers of this journal everywhere, during the coming season, make observations on the fruiting of this vine, and will those who are so fortunate as to find it in fruit examine carefully and report the conditions under which they so find it? Its habit of reproducing itself from the tubers is the supposed cause of its general infertility; and when found in fruit the tubers should be carefully unearthed, and their development and health noted, as well as their connections with the plant. I have only once met with this plant in fruit in the State of Kansas, and where I had no opportunity to examine the development of its tubers. Its flowers are very fragrant, thus attracting insects that may destroy the fertilizing elements of the female organs by undue irritation, or by producing premature dissemination of the pollen; but, whatever the cause, careful and patient observation will detect it.

Quercus alba-macrocarpa.—A true hybrid, perfectly fertile, is growing near Athens, in Menard county, Ills. The mother tree was undoubtedly *Q. macrocarpa* of the variety called *olivæformis*, as young specimens, apparently of the same age as the hybrid of that species, are or were growing in its vicinity. In general character its paternal blood largely predominates, its maternal characters are chiefly notable in the fruit, the younger branches, and in the form and pubescence of its leaves. From these several characters its parentage is readily traced, and it affords a most interesting instance of a fertile hybrid of these two distinct species of oaks.

The genus Quercus in Menard County, Ills.—The species of this genus here have prevalence in about the following proportions:

White Oak (*Quercus alba*), 33 per cent.
Yellow and Scarlet Oaks (*Q. coccinea*), 25 per cent.
Red Oak (*Q. rubra*), 10 per cent.
Burr Oak (*Q. macrocarpa*), 10 per cent.
Chestnut Oak (*Q. castanea*), 8 per cent.
Post Oak (*Q. obtusiloba*), 5 per cent.
Laurel Oak (*Q. imbricaria*), 5 per cent.
Black Jack (*Q. nigra*), 3 per cent.
Pin Oak (*Q. palustris*), ½ per cent.
Swamp White Oak (*Q. prinos*, var.), ½ per cent.

I have placed the Yellow and Scarlet Oaks together from the fact that the species are not easily known or readily separated; even good botanists are often puzzled to discriminate between them, and some have doubted the existence of both species, but the weight of opinion is at present in their favor. Their specific differences are to be sought chiefly in what might be called constitutional characters. Eleven-eighteenths of the species of the Northern United States east of the Mississippi are represented in this locality—a much greater proportion than the general flora of the same region—showing that these kings of the forest have somewhat equal powers in competing for existence under the conditions here prevailing. Since the settlement of the county a new generation is springing up, which is somewhat differently proportioned. The above estimates are for the original forests.

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GEORGE ENGELMANN PAPERS

From New York.—You ask for some botanical notes from this part of our great country. Vegetation is yet mostly dormant, and we must confine ourselves to anticipation of what Nature will soon present. Here and there, however, in warm sheltered spots, by brushing away the masses of fallen leaves we may recognize some of our early spring flowers nearly ready to burst forth into life and beauty. Among these is the Liverleaf (*Hepatica*), the Spring Beauty (*Claytonia Caroliniana*), and several kinds of violets.

Of the violets I must speak a little at large, although it is yet too early for their appearance. The commonest, and perhaps the most beautiful, is a blue violet growing in wet or damp grounds, especially in meadows and by the borders of brooks and streams, the *Viola cucullata*, Ait., which rendered into English means the Hooded violet, from the manner in which the young leaves are rolled together in the form of a hood. The color of this violet is quite variable, from a light sky-blue to a dark purple, but always bright and attractive. Next we have, in low or wet grounds, the small White violet (*Viola blanda*, Willd.), with roundish, heart-shaped, or kidney-shaped leaves, and delicate white flowers on short stalks, seldom rising more than an inch or two from the ground. Then we have the low yellow violet (*Viola rotundifolia*. Mich.), which is found on wooded slopes and hill sides. This has small, bright yellow flowers, opening in early spring. The leaves, at the time of flowering, are about an inch broad and nearly round, but when fully grown they are often three or four inches across. The three species we have mentioned are stemless violets, the leaves and flowers springing separately from the root or root-stock.

Of the stemmed violets we have a number of species. In damp shady places the low leafy blue violet, a variety of *Viola canina*, L., or the *Viola Muhlenbergii*, Torr., the Long-spurred violet (*Viola rostrata*, Pursh.), in rich soils on wooded hills, the Striped-flowered violet (*Viola striata*, Ait.), and the large white violet (*Viola canadensis*, L.), which is the largest species we have in the country, common in rich, open woods, the flowers of good size, whitish, and delicately tinged with violet. Lastly, we have the large yellow violet (*Viola pubescens*, Ait.) which is common in open, and especially in sandy woods.

I was much pleased the other day, in crossing a low place in a meadow, to observe the young flower-stalks, or spathes, of the Skunk Cabbage (*Symplocarpus fœtidus*, Salisb.) just shooting into sight. With a knife I cut down into the ground, and severed some of these from the root, that I might examine their very singular structure. They consist of a roundish mass, or head, in which grow many small crowded yellowish flowers, the whole surrounded by a thick, leathery kind of leaf, of a purplish color, spotted and striped with yellow and green, and extending beyond the cob, or head of flowers, enwrapping and almost entirely concealing them from view. The young leaves are already beginning to press out of the ground, and when fully developed they form a mass of large heart-shaped leaves, looking not unlike a head of cabbage, and, from their strong and peculiar odor, meriting the name by which it is generally known. A plant of such offensive odor should have some compensating qualities, and we find that the root of this plant has a pretty well established reputation in the Materia Medica.

Meagre as is the botanizing field among the flowering plants at present, we find it little more satisfactory among cryptogams. Several kinds of mosses have found warmth sufficient to make some growth, and send up fruiting pedicels and mature capsules. On the bodies of trees are several species of *Orthotrichum* (particularly *O. strangulatum*, Beauv., and *O. crispum*, Hedw.) in little round patches, and occasionally large masses of the handsome *Neckera pennata*, Hedw. I often gather this in fine condition on the beech wood which is brought into market. Various other kinds of mosses are still under beds of snow, where they find conditions favorable to their growth, and when their fleecy covers are melted away they will please the eye with their bright and lively colors, and repay tenfold any labor taken in a close examination. These small delicate objects are worthy of more careful study. P.

UTICA, N. Y., April, 1870.

ANSWERS TO CORRESPONDENTS.

Plants to Name—*Mrs. B. S. Lake, Colorado.*—It is a pleasure to look upon such finely preserved specimens as the Colorado plants you send. No. 1 is the sky-blue Columbine (*Aquilegia cerulea*, Torr.), one of the finest ornaments of the Rocky Mountains. The flowers are larger and more showy than either the garden Columbine (*A. vulgaris*, L.) or the wild Columbine (*A. canadensis*, L.) of the Eastern States. It grows about two feet high, has large bright blue flowers, the spur of the petals being two inches long. It is well worthy of cultivation. No. 2 is the smooth Mountain Maple (*Acer glabrum*, Torr.) It is a small shrub, six to eight or ten feet high, with small smooth leaves, somewhat three-lobed and toothed, and producing an abundance of the winged fruit peculiar to the maples. No. 3 is *Oxytropis Lamberti*, Pursh., without any common name so far as we are aware. It belongs to the Pea Family (*Leguminosæ*). It is a low plant with perennial root, bearing all the leaves at the ground and sending up simple spikes of flowers, varying from light blue to purple, which are succeeded by upright cylindrical pods about an inch long. The plant is wide-spread over the plains and among the lower mountain ranges. No. 4 is a shrub peculiar to the Rocky Mountains, nearly related to the Hydrangea, and is botanically known as *Jamesia Americana*, T. and G., in honor of the discoverer, Dr. James, the Botanist of Long's Expedition in 1820. No. 5 is a plant well known in the Western States, occurring in hazel patches and the borders of prairies, and is sometimes called Shooting Star, sometimes Pride of the Prairie (*Dodecatheon Meadia*, L.) It is a unique and beautiful plant of the Primrose Family. We do not mean the *Evening Primrose* Family, but the *true* Primrose Family (*Primulaceæ*). The type of this family is the Primrose of Europe, of which genus we have but two species (both rare) in this country. The Dodecatheon has a number of large, oblong, smooth leaves at the surface of the ground, from which rises a long naked stem a foot or two in length, and surmounted at the top with an umbel of from five to twenty flowers, which are nodding when fully open, but in fruit are strictly erect. It has been somewhat introduced into cultivation, and is well worthy a place in every garden.

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Meehan, Quercus heterophylla
is a form of Q. aquatica

NOVEMBER 2. 1875

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-eight members present.

Natural Hybrids. Quercus heterophylla, Mx.—Mr. THOMAS MEEHAN said, that in reference to the minutes of the last meeting just read, he might offer a few additional remarks on *Q. heterophylla*, and its connection with *Q. Phellos*. It was a subject of much interest equally to the mere botanist, the student of the origin of species, and to those who were investigating the frequency or otherwise with which hybrids occurred in nature.

He doubted, he said, whether hybrids often occurred naturally, and yet with the supposed abhorrence of plants to use their own pollen, and the consequent invitation which they extended to foreign pollen to fertilize them, it would be remarkable if some instances of hybridism did not occur, and perhaps remarkable that it did not occur oftener than it was supposed to do. It was such questions as these which gave the supposed hybrid origin of this oak its chief interest. In this connection he referred to the number of the *Revue Scientifique* then on the table, with an abstract of some remarks of M. Ch. Naudin before the Academy of Sciences of Paris, in which he says, that, of a large number of cases of hybrids that he had experimented with, only two retained their hybrid forms beyond two generations, and these two, grasses of the genus *Ægilops*, lost their respective forms, and reverted to that of the original female parent in four generations.

Mr. Meehan said that the original tree described by Michaux grew on the original Bartram estate. That tree had long since been destroyed; but there were now large trees, both at Bartram's and Marshall's, which were said by the late Col. Carr, who had married Miss Bartram, and up to comparatively recent years owned the garden, to be seedlings from that original tree. If this were correct, it would sustain Naudin's views, as these trees were so like the willow oak as to be scarcely distinguishable. They only differ from the willow oak, in an occasional lobing of the leaf, a matter of little consequence in determining a species in this genus. It is more than likely, for reasons he would presently state, that William Bartram found young plants with lobed leaves growing, and transplanted them to his garden, believing them to have been seedlings of the *Q. heterophylla*, and not that they were from seed actually gathered from the tree.

In his description Michaux speaks of it as probably having *Q. imbricaria* for one of its parents, but there is no proof nor probability that this species ever grew in these parts. It could not

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then be considered in this relation. Moreover, hybrids, which cannot necessarily be abundant in nature, or there would not be the order we see, seldom come in more than one place, or if so, be exactly alike, and yet investigation shows this form to be by no means uncommon. Michaux rashly undertakes to say that there is not another tree to be found within a hundred miles of Philadelphia, yet Professor Buckley found one in a single day's botanizing in New Jersey near Camden, as recorded in our Proceedings; he had himself found it during one day's botanizing in Delaware as recorded in Gray's manual. Professor Leidy, Mr Smith, Mr. Cope, and Mr. Burk have found it in New Jersey, and there were now on the table specimens gathered by the latter gentleman near Woodbury, who had found two trees on this occasion, and had seen quite a number on other occasions. There is no doubt that when these casual visitors meet with trees, there is no great scarcity, and this is not in accordance with what we have to expect from hybrid trees.

MISSOURI BOTANIC
GEORGE ENGELMA

Now as we see in these specimens of Mr. Burk, as well as in the original drawing in Michaux, the venation is wholly distinct from *Quercus Phellos*, and *Q. imbricaria*, and it is here that we find the best characters for distinguishing the species of oak. There is a petiole nearly an inch long in these specimens, and also in Michaux's drawing, and more or less of a petiole in all the specimens he had seen; and, while the leaves of the *Q. Phellos* are thin, those of *Q. heterophylla* are coriaceous. A hybrid unites the characters of two parents, but there were no two parents here in the North which could unite and form a character like this, and so the supposed Bartram and Marshall progenies are out of the question.

In the monograph on *Cupuliferæ* by Alphonse De Condolle in the *Prodromus*, this oak is made a form of *Q. aquatica*. This suggestion, misled by the probably historical error in regard to the living Bartram tree, he had regarded as preposterous, and he believed most North American botanists had agreed with him. The forms of leaf most familiar to Quercologists, in *Quercus aquatica*, were the triangularly wedge-shaped, nearly sessile ones, common in the South on mature trees. But further north, and in young and vigorous trees south, the leaves were petiolate, approaching those now exhibited by Mr. Burk. Besides this there was in Michaux's figure an outline of one of these forms of leaves, which one could see by comparison with his figure of *Q. heterophylla* to be the same. The habit of growth of the trees of *Q. aquatica* is very distinct from that of *Q. Phellos*, and Mr. Burk reports these trees in New Jersey to be so distinct from the *Q. Phellos* among which they grow, that he can distinguish them a long distance away. The only remaining difficulties to students would be that De Candolle classes *Q. aquatica*, variety *heterophylla*, among the "*sempervirentes*," while we know it is deciduous, and then that it is a too high northern range for this species. The first

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difficulty he could dispose of. He had had in his garden for a number of years a *Quercus aquatica* from seed gathered near Vicksburg, where it was evergreen. But with him the same tree was deciduous. In regard to the range, De Candolle noted on the authority of Michaux that it grew in Maryland, and Mr. Canby reports it common in Delaware. This brings the range of the species up to our doors.

It is therefore clear that *Quercus heterophylla* is simply an outpost in the camp of *Quercus aquatica*, barely indeed ranking as a variety; and the result of our investigation is a tribute to the remarkable acumen of Alphonse De Candolle, who, with so little material before him, was able to guide us who had it all.

Hybrid Juglans.—Mr. MEEHAN, continuing his remarks on natural hybrids, exhibited a fruit from a tree growing near Meadville, Pennsylvania, and handed him by Alfred Huidekoper of that place. The fruit was of the oval form of *J. cathartica* (Butternut), but had the comparatively smooth surface of *J. nigra* (Black walnut), and was quite destitute of viscous glands. It was believed to be a natural hybrid between these two species.

Hybrids of Pyrus Sinensis.—Not exactly as natural hybrids, continued Mr. MEEHAN, but yet as hybrids without intention by man, were some pears he now exhibited, raised by Mr. Peter Kiefer of this place. For near twenty-five years Mr. K. had grown the *Pyrus Sinensis*, or Chinese sand pear, and for some years past had been fruiting seedlings from the original tree, and these have fruit uniformly the same as its parent, and as they seem to do in other parts of the world. Mr. Meehan exhibited a fruit and compared it with a figure in a recent number of the *Gardener's Chronicle* of London, then lying on the table, the two as similar as if the specimen had been used as copy for the sketch. Some years ago a Flemish beauty pear, a well-known variety of our common garden fruit, had flowered in close proximity, and since then pears mixed in character had been raised from this supposed to be hybrid seeds. The specimens exhibited by Mr. Meehan were much larger than the sand pear, the female parent, and as large as the average Flemish beauty of our markets; the red cheeks, and fine lemon color, being rather more beautiful than the average of Flemish beauty, though this kind is popular as a particularly handsome fruit.

NOVEMBER 9.

Dr. LECONTE, Vice-President, in the chair.

Twenty-three members present.

A paper entitled "On a New Genus of Lophobranchiate Fishes," by Edw. D. Cope, was presented for publication.

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ENGELMANN PAPERS

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NOVEMBER 16.

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-seven members present.

The following papers were presented for publication:—

"Descriptions of New Fossil Shells from the Tertiary of California." By R. E. C. Stearns.

"A Descriptive Catalogue of Scalidæ of the West India Islands." By O. A. L. Mörch.

On Trichocephalus affinis, Dies.—Dr. CHAPMAN noticed having found in the intestine of the llama the *Trichocephalus affinis* described by Diesing as occurring in the camel, and observed that it was interesting to find the same intestinal worm in animals so closely related structurally, though so widely separated geographically.

On the Castor Glands of the Beaver.—Dr. CHAPMAN also called attention to the arrangement of the castor glands in the American beaver, the lower symmetrical glands opening into the ano-preputial passage consisting of only two glands, whereas the European species in this respect exhibited three.

NOVEMBER 23.

The President, Dr. RUSCHENBERGER, in the chair.

Seventeen members present.

On the Mesozoic Red Sandstone of the Atlantic States.—Prof. PERSIFOR FRAZER, Jr., said that the art of stratigraphy has proved itself capable of most wonderful extension, and has given the foundation for whatever of exactitude of statement can be claimed for geology.

It is another instance of the surprising lengths to which probability can be carried by inductive reasoning based on comparatively few but generally admitted premises. It is surprising to read over the results of the application of this method in any general outline of geology, and to note that mere relative position of things can unfold to us a marvellous story of motion, and evolution or successive changes, according to law.

The more facts we know the wider is the range of this application, and sometimes one very little fact well established will require vast continents to be plunged in the imagination thousands of feet

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EXCELSIOR

MOORE'S RURAL NEW-YORKER.

RURAL AND HOME AFFAIRS. ARTS, SCIENCE, LITERATURE, NEWS, MARKETS, ETC.

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Arboricultural.

THE OAKS.

BY THOMAS MEEHAN.

I HAVE made the Oak family a special study, and from the experience and knowledge thus acquired, I do not hesitate to say that the lover of trees would have more satisfaction in growing Oaks than he would with any other class. Some have hesitated to grow these trees because of an idea that they are difficult to transplant. This is true of a tree that has never been moved. To take an Oak from the wild wood to the garden is surely labor thrown away. Oaks have each a large tap-root and a few main roots that run rather deep. If these are cut off when the tree is but a year or two old, the tree makes a new set, and these latter keep tolerably near the surface. In the course of a few years, however, they assume a downward tendency, and ought to be again transplanted.

A good nursery Oak tree should be transplanted twice — once when one or two years old, and again when five or six. Such trees never die when transplanted under ordinary circumstances. I have seen hundreds moved, after such previous treatment, that were at least 12 feet high and 9 to 12 inches in circumference, with no more loss than if they had been willows or poplars and but 6 or 8 feet in hight. Two years ago I saw over a thousand planted with a loss of less than five per cent.

In transplanting all trees a little pruning is necessary, and to the Oak especially is the use of the pruning-knife very grateful. But a proper discrimination should be made as to what you cut away. Usually people simply "shorten the branches." I have seen them cut so that they were but stumps, with half a dozen snags—mere posts for clothes-lines.

The common people, who who are supposed to have little horticultural sense, say they may as well get a small tree as pay for a large one and then cut it back to stump. And I guess they are right, as there is no occasion for it. It is bad pruning in science as well as in practice. Good pruning leaves all the solid, vigorous branches and cuts away only the weaker ones. It is these sickly, delicate things that always die first in a pinch, any how, and when we are going to have a fight with Nature, as we do when we transplant, the sooner we clear the field of all sickly soldiers the better it will be for the rest. Let any one try this in transplanting and he will find it literally as well as figuratively true. Some people object to meddling with Oaks because they grow slow. They say they will not live to see trees of them. Now, it is rather the other way.

Most of the Oaks are rather rapid growers. True, they do not grow with the briskness of a willow or a poplar, or the *Herininiera* of Africa, which will increase its diameter four inches a year; but I know of numerous cases, and in different species, where the diameter of the Oak has increased three-quarters of an inch in a year, and not under specially favored circumstances either. I have cut many a branch from an eight or ten-year old tree that has given four and five feet of growth as its season's work.

I once made a dozen first-class hitching-posts out of an Oak tree but twelve years old, and which I had to cut away because of a new street. Surely that was growth enough to satisfy any reasonable creature. That tree was of a foreign species, however, the *Quercus robur*, or Royal Oak, which the English tell us has "borne for a thousand years the battle and the breeze," though I presume not growing at this rate all the time throughout the centuries.

Now, I am not much of a materialist. I love money, perhaps, some, but I prefer to have with it some of the spiritual enjoyments of life. I have some trees on my property no money could buy. They seem friends of mine. There are among them Cedars, Tulips, Chestnuts, Gums, Sassafras and Oaks, and many a time have they entertained both me and mine.

I fancy there are thousands who, like me, look up to some tree as to a part of themselves, and who would indignantly spurn the thirty pieces of silver offered to betray it. But there are other trees and other aspects, and I never feel so much like going West and making money as when I look upon my young Oaks and note how freely they grow. There is no timber to equal that of the Oak for certain purposes. Ask any railroad man, any fence-maker, any bridge-builder, any maker of a "barrack" or other farm building—they all place the Oak above and far in advance of other woods. Ask British shipbuilders as to its value in the construction of ships, and they will tell you of its lasting qualities and point enthusiastically to their old, wooden walls of Oak in proof of what they say. It is indeed the Oak which has made England the great nation she is to-day.

A plantation of Oak in the West would be a fortune to any man, and he could turn the fortune over a dozen times in a lifetime, for Oaks become profitable very soon. I should plant them about as far apart and in the same manner as corn, so that for the first two or three years they could be hoe-harrowed like corn, to keep the weeds down.

The first thinning might then commence, and the product be turned to account for "straps" for hoops and boxes, for which there is always a good demand; and for some years afterward, in ways which are hardly necessary to specify, there is an annual use to which the thinning can be applied. In about ten years the acorns appear, and then the mast is of value in feeding hogs and turkeys, and long before we know it the real timber is there! I am quite sure that if I had 160 acres of land in a prairie country, I would put at least 10 acres of it in Oak timber, feeling perfectly satisfied that long—yes, *long*—before I should grow gray, if I were as young as I once was, I would make more out of the land in that way than I should out of any other part of the farm.

Of varieties for rapid timber growth, I incline to the opinion that the English is the best, notwithstanding my regard for the species of our own land. I believe it will grow into money faster and that the timber is at least as good as any in this country, Live Oak not excepted, and then for the purpose of hog feeding none can come near it. It bears young and abundantly, and every year.

For timber purposes, of the hardy kinds of our own species adapted to cold climates the White Oak is good; so is the Chestnut Oak; next I should place the Black, Scarlet and Red Oaks. The bark of the Black and Chestnut Oaks is valuable for tanners' use, for after all the substitutes for bark in tanning and the 4 per cent. of tannin found in Sumac, *Polypodium amphibium*, and other things, I doubt whether most tanners would not prefer good old Oak bark. At any rate, while we are growing good oak timber, we are making bark also, whereas in most of the substitutes the whole growth is useless, except for the percentage of tannic acid they contain.

Passing now from the Oak as an aid to the physical wants of man, I may say a few words for the benefit of those who take an intellectual enjoyment in knowledge for its own self. There are about 300 different species of Oak known. A few of them are natives of Europe, but are more abundant in the United States. The Oaks of the latter country, however, have not much in common with the European species. The Japanese Oaks, on the other hand, bear a close affinity to those of the Eastern United States. When we get to the Rocky Mountains we find *Quercus undulata*, and here we find the first near approach to



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the European kinds, it being between the Turkey Oak (*Q. cerris*) and the English (*Q. robur*). In Mexico the species are numerous, and in the East Indies and the Phillipines they abound. What might be termed the Mexican race of Oaks extends up into California.

Many California trees will stand the rigors of the winters of the Middle States, but the California species of Oak will not, probably because they are but emigrants to the Golden State from the land of the Aztecs and have already gone as far north as prudence would dictate.

For ornamental purposes adapted to our general culture, I would make a list were it not that all capable of standing the climate are worthy of culture. They are all so beautiful, it is hard to make a choice. Where it is practicable and the greatest beauty is desired, I think they look best when branching direct from the ground; but still a bold, heavy trunk, straight, tall and branchless, with its head formed of bold, strong branches, is so beautiful that I should not be sorry if I had to be fined heavily for not making a choice. Of those adapted to culture in the Middle States, there are the Overcup Oak (*Q. lyrata*), the Mossycup Oak (*Q. macrocarpa*), Spanish Oak (*Q. stellata*), White Oak (*Q. alba*), Post Oak (*Q. obtusiloba*), Durand's Post Oak (*Q. Durandi*)—a recent discovery of BUCKLEY in Texas; Swamp White Oak (*Q. bicolor*), Rock Chestnut Oak (*Q. prinus*), Michaux's Chestnut Oak (*Q. Michauxii* of NUTTALL), Rocky Mountain Oak (*Q. undulata*)—one of the best for forming into an Oak thicket; Pin Oak (*Q. palustris*), Red Oak (*Q. rubra*), Scarlet Oak (*Q. coccinea*), Black Oak (*Q. tinctoria*), Jersey Scrub Oak (*Q. ilicifolia*)—a good dwarf for thickets; Black Jack Oak (*Q. nigra*), Southern Black Jack Oak (*Q. Catesbaei*), Water Oak (*Q. aquatica*), Upland Water Oak (*Q. laurifolia*), Shingle Oak (*Q. imbricaria*), Willow Oak (*Q. Phellos*), English Oak (*Q. pedunculata*), and Turkey Oak (*Q. cerris*).

Besides the above there are numerous other varieties, the European especially being abundant, and in their characters for practical purposes they are as good a species; indeed, in many respects they are much more distinct.

Our native trees are often found varying in a remarkable degree—so much so, indeed, that some of our best botanists regard the variations as "hybrids." But gardeners who are familar with the wonderful variations among the English Oaks, in which no hybridization is possible, do not accept this opinion. Those who would know all about the American Oaks adapted to culture should read GRAY's Works—"The Monograph of Oaks," just issued by that great botanist, ENGELMANN—and the RURAL NEW-YORKER.

ENGLISH OR ROYAL OAK.

Mr. THOMAS MEEHAN, in his excellent article on the Oak, which may be found preceding this, speaks in such high terms of the value of the English or Royal Oak that we were prompted to give an illustration (as will be seen by referring to first page) of a handsome specimen of this tree now growing in the grounds of one of our esteemed correspondents, residing a few miles from this city. The tree is about twenty-five years old, and having been planted where it had room to grow, being unobstructed on all sides, the branches consequently spring from near the base of the stem, assuming a natural and most graceful form.

It is to be regretted that our native as well as foreign species of the oak are so little planted in this country, for they are deserving of especial attention, and it is to be hoped that Mr. MEEHAN'S remarks will awaken a new interest in these trees among all of the many thousands of our readers, even if they do not extend any further.

Field Crops.

RYE FOR PASTURE.

IN localities where the drought has prevailed during the present season, pasture will be light and thin next spring, and it would be well for farmers to provide some substitute to make up for the deficiency. We have already recommended the sowing of rye for this purpose, and are pleased to add to our own experience that of the Journal of Agriculture as to the value of this crop for pasture.

Two years ago our corn crop was a short one on account of an extended drought. All kinds of expedients were resorted to, to bridge over the winter months. Not only corn but all kinds of crops save wheat, were comparative failures. We experimented that year with rye and our success was far beyond our expectations. Our first sowing consisted of a ten-acre field upon which we had grown and fed down the corn to hogs. The corn crop had been well cultivated and the ground was entirely free of weeds and grass. We commenced about the first of September by sowing down on the ground and harrowing in with a two-horse harrow. We completed about half the field in this manner, using about five bushels of seed, or one bushel per acre, when we concluded we were not putting our rye in as we should. The remaining five acres we plowed in with double-shovel plows after which we harrowed thoroughly. Our rye soon came up and made a luxuriant growth upon which we grazed pigs, calves and cows during the winter (when not covered with snow) and until such time in the spring as blue-grass pastures would do to turn on. Contrary to our expectations the portion that was only harrowed afforded much the best grazing and the rye was much less injured by the stock going over it than the other portion. After taking our stock off, the rye made a fine growth and yielded more per acre than did our wheat crop, which was not pastured at all and which was sown on much better soil.

We mention this little experience that others may give our readers the benefit of their experience. We are satisfied this crop will grow and be a profitable one upon soil upon which wheat will not pay expenses. As regards the benefits to stock, lambs, sheep, calves or any other kinds of a change of diet during the long winter months it is not necessary to speak, all acknowledge this as a necessity.

CORN FOR THE POOR OF ENGLAND.

THE London Pall Mall Gazette says:—The enormous import of wheat from the United States into this country, and the probability that it will increase rather than diminish in time to come, lead us to reflect how it happens that Indian corn, which is so largely consumed in various forms by all classes in America, fails to find favor with Englishmen at home. In some way maize is certainly to be preferred to wheat; and those who have once acquired the taste for it on the other side of the Atlantic certainly miss the Indian corn on their return. We suppose, however, that there is little hope that our working classes will ever take to this cheap, wholesome and nutritious food. The mere fact that it is cheap, operates in some measure against its adoption. There is nothing, perhaps, in an Englishman's nature so stupid as his dislike to have it supposed that he is content with cheap food. And Indian corn is very cheap.

SOWING SALT ON WHEAT LAND.

THE Toronto Globe recommends that the best time to sow salt on land for winter wheat is immediately before the seed is sown. Where land is plowed in the fall for spring crops then sow the salt late in the season on the plowed land. It is always sown broadcast when applied alone and it has been applied with good effect at the rate of from three to twelve bushels per acre. But all trouble and labor of that kind may be saved by scattering it on the manure heap, when it will do just as much service as when sown alone. That salt is beneficial on many soils there is no question, but it has not been tried sufficiently on the several kinds of soils to indicate with certainty how much or how little will serve as a fertilizer.

Farm Economy.

FARM CROPS IN NORTH CAROLINA.

ANOTHER year of toil is closing and the farmers are reckoning the results. The heat in the first half of July was intense and destructive in this State. The drought was protracted, except in a few limited localities; but the heat was so great that unusual injury was done to farm crops in a short time. The month of August was generally seasonable—restoring the corn and tobacco to a considerable degree.

A respectable but not full crop of corn is made. Perhaps a little over one-third of a crop of tobacco was planted. That is much improved during the last month. I think that more than usual of the old crop was held back and is seeking the market now. Prices are rather high. It seems in this case that waiting will pay. The year has been quite favorable for hay. The first mowing was good; the second injured by drought; the last (not yet cut) promises a very fine yield. Indeed it is seldom that grasses grow as they have for the last month.

Potatoes average well. Early Irish potatoes were hastened by the heat. My experiments this year proved the Early Vermont estimable for quality and earliness, but unprofitable as to quantity. Brownell's Beauty, though not white or mealy, gave satisfaction at the table and produced well. The Snowflake, with only ordinary care, made thirty to one, and possessed every good quality.

Apples are scarce in the central part of the State—probably the same throughout the entire State. There has been enough of them for a limited supply for immediate demands. Enough peaches to remind us of the delicious feasts of other years and awaken the hopes for another season.

The scarcity of money is sorely felt. The people generally are perforce practicing more economy, and slowly adapting themselves to the stringency. There is a growing impression that we have seen the worst of the "hard times."

Yours truly, N. C.

A CORN HORSE.

H. IVES writes to the New York Times that a corn-horse is an implement of so much utility in harvesting corn that it is a wonder that so many farmers will cut up their corn without the aid of one to stand the shock up to while cutting. It is a tool which any farmer who wants it will make for himself, for there are none in market, and no agent about to tell us of their great usefulness. But they are of no less merit for all that. By using one to form the shock to, instead of placing it against a standing hill, we have something much firmer to stand it to, we have all the corn cut up, and are pretty sure to have the shock better balanced, and for that reason standing better, because every quarter as it is cut will be placed into each quarter section of this implement (or corn horse), thus bracing the whole nicely from each quarter when bound together at the top.

For instance, if I take six rows of corn for a row of stooks, and six hills of a row (as I generally do), giving thirty-six hills to a bunch, I take my horse in between the third and fourth rows and stand it for the shock between the third and fourth hills; standing so it represents nine hills in each quarter Then I cut the first three hills of the third row and place in one quarter, while the man working against me cuts the first three hills of the fourth row and places them in the second quarter opposite. Then each cuts the next three hills of the same rows, placing into third and fourth quarters. Next cut the second and fifth, then the first and sixth rows just the same, thus only putting three hills into each quarter at once alternately, will balance it up good to stand.

The best way to make a corn horse is to get a dry cedar pole 16 feet long, about 4 inches at the butt, and if a little crooked, bowing about a foot all the better. Put two legs into the butt of the pole 2½ or 3 feet long, with a spread of 2 feet on the ground, and so as to have the pole bowing up if it is crooked, for then it won't require so long legs. At 5 feet back from these legs bore an inch hole horizontally through the pole, through which insert a loose pin 20 inches on each side, that is, 3½ feet long. Then for use stand this in the corn as described above, so that the shock will be stood up into the angles made by this pin and the pole. When this is cut and bound pull out this long pin, then taking the large end of the pole draw it ahead through this shock and place it for another, and so on through the field. It will be found plainer, handier work, and can be done by coarser or less skilled help to put it up in good order as quick and as well as in any other way.

PROTECTION AGAINST GRASSHOPPERS.

DANIEL G. LANE writes to the Council Bluffs Globe, from Bermuda, W. I., telling how crops may be protected against grasshoppers, and potatoes kept clear of beetles. Now while we do not believe either of the protective agents proposed are of any practical use still they may be worth trying. Mr. Lane says:—For the last two weeks I have been in this country from the West Indies, and I find the grasshoppers making great ravages in vegetation. In order to prevent this, burn one pound of sulphur on charcoal, in the center of a field, and save what it has taken so much toil to develop. To prevent potato bugs from destroying the crop, plant two grains of flax seed in each hill. This will prevent them from injuring the potatoes, as they will not go near the flax.

The Horseman.

THE COACH OR CARRIAGE HORSE.

THE Kentucky Live Stock Record takes a very sensible view of the late excitement in breeding fast trotters, to the neglect of the good carriage and general utility horse, and we are pleased to place its remarks before our readers as they are worthy of a careful consideration.

The old style coach or carriage horse is almost extinct in Kentucky. His place is supplied by the trotter. The horse of five and twenty or thirty years ago is rarely seen now-a-days. The big bays, browns and chestnuts of former days, ranging from 15¾ to 16¼ hands high, with deep and well-proportioned bodies, arched crests, strong and clean bone under the knee, open, sound, tough feet, with great knee action, lifting their fore feet high, are as scarce now as they were plentiful at that period. The display of coach and carriage horses at our local fairs some years ago, as well as at other less notable gatherings, was one of the most popular and charming parts of these exhibitions. Most of these horses walked and trotted well, picked up their fore feet smoothly, bent their knees and kept their hind feet well under them. This activity, with their great beauty, short, pointed ears, extra style, hardiness, endurance and docility, eminently distinguished them as splendid specimens of the coach and carriage horse.

Without the speed of the modern trotter, they stood remarkably well over our hard unyielding macadamized roads, and could travel all day. Our farmers would do well to go back and breed this class of horse and give up to a great extent the breeding of trotters, the supply of the latter in the last few years being greatly in excess of the demand.

Suitable sires to cross with the common mares and stock of the country can be obtained at a trifling expense among the many thoroughbreds that either break down yearly, or have not sufficient speed to be classed high as racehorses. Among them are many strong, stout and sound horses that can be bought cheap and whose service fees could be put at from $10 to $25, and pay a handsome per cent. on the investment. Nearly all our farmers seem desirous of breeding a trotter, and every year valuable mares are bred to inferior sires because they stand cheap, many of whom possess serious deficiencies. In this section, one of the best breeding districts in America, there are every year many indifferent sires advertised, whose stud career it would be better for the country at large if it was cut short by the free use of the knife. Many of these candidates for public patronage possess neither beauty, style nor finish, but have many faults which should not be perpetuated, such as weak, narrow loins, light thighs, bad curby hocks, light bones and thin, shelly feet. Many of them have nothing beyond their breeding to recommend them, and this often consists of some remote connection with a once fashionable strain of blood.

When farmers use such sires there is great uncertainty in producing sound, good-looking offspring. We would not be considered as opposed to the breeding of trotters, for we are not; but we are opposed to the indiscriminate breeding of mares either unsound themselves, or to sires that are unsound, with the expectation of getting a sound colt, fast trotter or good coach horse. When a farmer possesses a well-bred mare of known blood or of high form and marked characteristics, it is well to breed to the best sire within reach, but to breed a common mare of little trotting action to the best trotting sires, will oftener fail than succeed in producing a good trotter, and in nine cases out of ten will bring the farmer in debt before the youngster is half developed. Dissatisfaction and disappointment are nearly sure to follow such breeding, and when it does fail, the blame is generally laid on the sire, irrespective of the bad or indifferent qualities of the dam.

With young trotters selling in Kentucky at from $150 to $250 per head, even after they are broken and partly handled, it will not pay to breed anything but the best mares to high-priced stallions. Most of the stallions in Kentucky have been standing too high, and they must come down to suit the times. It is well enough perhaps for a few who have acquired a national reputation through their produce to demand high fees, but they are few and far between. It will not pay to breed common or ordinary mares of the country to $100 and $150 stallions.

We firmly believe that it will pay a majority of our farmers better to breed and rear the old style coach and carriage horse than it will the trotter, especially when you take into consideration the cost of the stallion's services, and the expense necessarily incurred to develop the trotter. There are a number of men who make a speciality of breeding trotters, and it should be left with them. If a farmer possesses good mares he had better breed on the shares or farm them to some reliable breeder, than to breed himself, and have the country dotted all over with tracks, his sons driving young trotters to the neglect of more important work on the farm. The farmers of this State have enormous advantages over other less favored sections of country. We have better material than is to be found elsewhere, from the long and free use of thoroughbred sires, which enables our farmers to enter into breeding under more favorable circumstances. We are in possession of the most delightful climate, the finest soil and most luxuriant grass region in the world and need fear no rivals; and the large number of thoroughbred horses bred annually that are not good enough for races, furnish capital material to produce the coach, carriage and general utility horse.

FENER IN THE FEET.—There is nothing better for fever in the feet of horses than bandages wet with water. It is better than "stuffing" with filth, so often recommended.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

— THE OLD CORK OAK AT FULHAM PALACE.—The engraving on p. 145 (fig. 22) represents one of the oldest and finest Cork Oak trees in the country. The engraving was executed from a photograph taken for us by Mr. ARTHUR SMITH in the autumn of last year. The tree has passed its prime, having been planted at Fulham, probably by Bishop COMPTON, more than 200 years since. At breast height the tree girths about 10 feet. It is a fine specimen, but needs the support of Ivy-clad props. From the acorns numerous seedlings have been raised. The Cork Oak, Q. Suber, is a native of Southern Europe and Northern Africa. When the tree is about fifteen years old its bark is removed by incisions in such a manner that no injury is done to the tree. After eight or nine years the process can be repeated. The outermost layers form the "male cork," which is of little value, except in the form of "virgin cork." After their removal new corky layers are formed in the denuded bark, which constitute the female cork, or cork of commerce. The tree at Fulham stands in the angle between the palace and the newly-erected chapel, on the walls of which latter Ivies of various kinds are placed, some of which have made extraordinary growth, especially the Silver Ivy.



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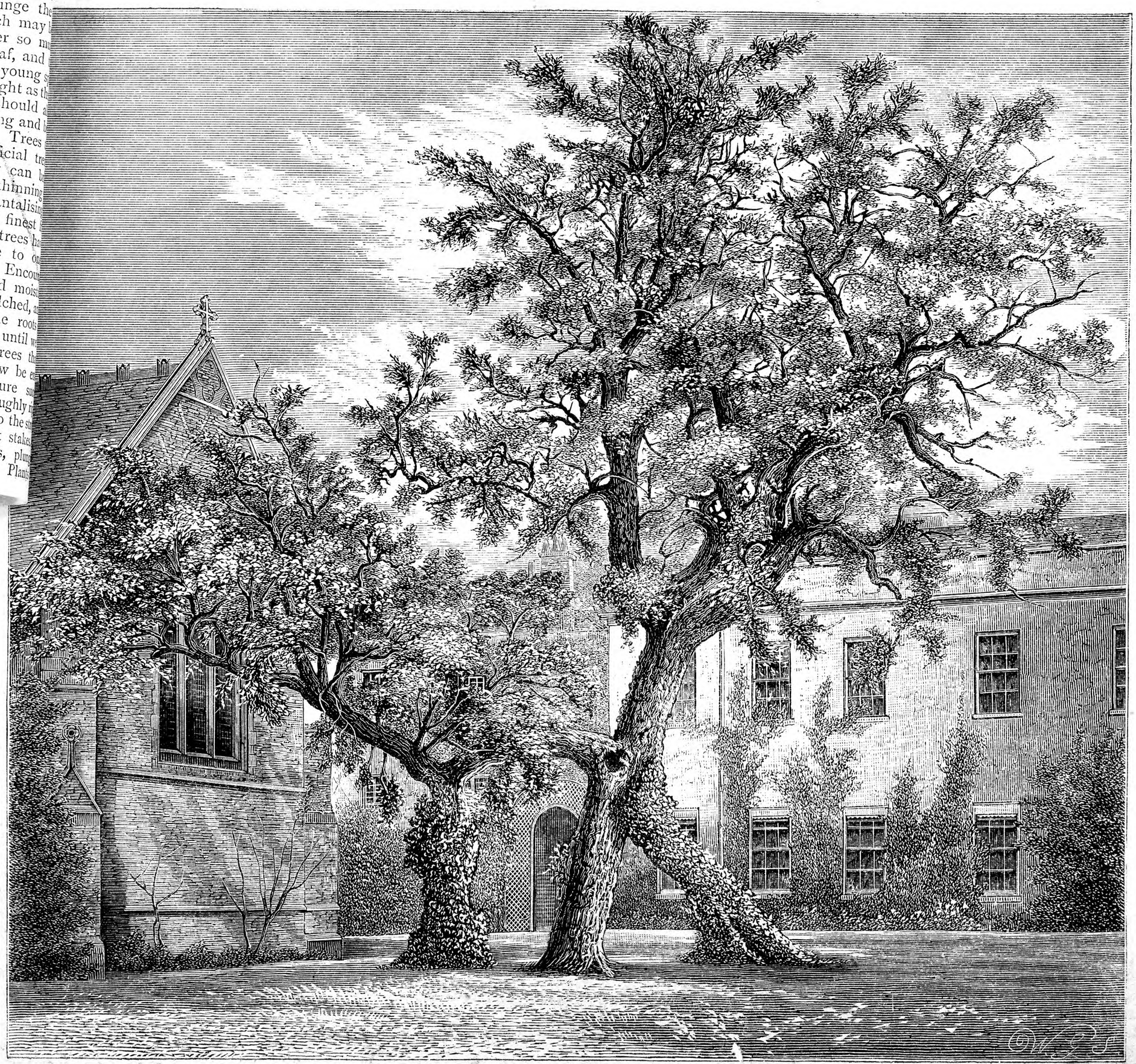


FIG. 22.—THE OLD CORK TREE AT FULHAM PALACE. (SEE P. 144.)

Jas. L. Ahman Febr 1st 1879

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such competitions as we are considering any deviation from the strict letter of the rules, no matter what were the intentions of those who framed them, cannot be made without doing an injustice to those exhibitors who act in perfect conformity with the rules as they exist. Bearing upon the subject of horticultural exhibitions, we may point to one matter in which the promoters frequently defeat the object they have in view, that of bringing together as extensive and imposing a display as possible, with which intention they offer prizes for collections of plants, flowers, fruits, and vegetables, with no limit attached to them except the minimum, that is, each exhibit must consist of not less than so many plants, dishes of fruit, dishes of vegetables, &c., but as many beyond the specified number as the individual exhibiting chooses. The frequent result of this is that many are deterred from entering the competition on account of their inability to judge what they may have to compete against—often, unless they happen to be of an exceptionally sanguine temperament, anticipating their opponents' productions to be collectively stronger than they turn out to be. Those who on this account do not put in their appearance frequently have the best grown examples, yet limited in number of varieties they cultivate, and do not care to run the risk of being beaten by quantity rather than quality. Another objection attached to unlimited competition, is that it is always liable to make the judging unsatisfactory both to the individuals officiating as well as to the exhibitors. Following the same principle, dishes of fruit of all the larger kinds, especially such as Peaches, Nectarines, Apricots, Plums, Pears and Apples, should consist of a fixed number. Where this has not been stated in the schedule we have seen, even in exhibitions of sufficient importance to warrant the supposition that nothing would have been left in a loose indefinite way, some of the collections with dishes of Peaches and Nectarines consisting of a couple of dozen each, which caused the work of judging to be much more difficult. In the case of groups wherein general suitability of the plants collectively for the purpose required and effective arrangement of the whole is more the test of merit than the quality of the individual specimens, the space covered should be strictly defined and adhered to, any extension beyond the limits disqualifying those infringing the regulations.

—— PRYAL'S GOLDEN CYPRESS.—The Editor of the *Californian Horticulturist* states that during a visit to the nurseries of A. D. PRYAL, on the Temescal Creek, some four miles from Oakland, California, he saw the original tree of Pryal's Golden Cypress, which he describes as "a seedling of marked character from the well-known C. pyramidalis. The deep yellow blotches run into the branches, and even show on the cones. The compact growth and evenly distributed variegation make this a promising novelty."

—— Mr. HILDEBRANDT, the well-known traveller

Even for decorating on a large scale they are intolerable, and now that the art of drying flowers has been brought to such perfection they are unnecessary. Not much less odious than paper flowers are artificially dried natural flowers dyed some impossible colour. If we are not satisfied with Nature, let us make a purely conventional design, not try to improve Nature. We have perhaps as much in this country that is bad in design as any country could produce, particularly in wall papers, carpets and ladies' attire.

—— THE "BOTANISCHE ZEITUNG."—We see that Professor A. DE BARY has undertaken the sole Editorship of the *Botanische Zeitung*, from the commencement of the present year. The principal articles in the number to hand are :—"On the Formation of Shoots on the Leaves of Isoetes," by K. GOEBEL ; and "Observations on Entophytal and Entozoical Vegetable Parasites," by P. F. REINSCH, with a double plate. This is a very interesting paper, so far as we have seen it, and we may perhaps find space for the substance of it when we have seen the remainder. Some of REINSCH'S observations include some curious instances of one alga parasitical in the thallus of another, thus strengthening the algo-lichen theory of SWENDENER and others.

—— THE WINTER IN CALIFORNIA.—We learn from the *Californian Horticulturist* that the second week in December was characterised by a cold spell of marked severity ; and sad news is reported from every part of the State. Plants in their nature tender, which have stood several successive winters, have succumbed. In Alameda County Lime and Citron trees were killed nearly to the ground, Lemons suffered, and also irrigated Oranges, and Orange buds have been injured in Los Angeles County. In most cases, however, a covering of straw protected Fuchsias, Pelargoniums, and similar plants. The writer advises the use of wisps of straw tied around the trunk for trees, and the top to be covered with a cloth.

—— DR. REGEL.—The *Deutsche Gartner Zeitung* for Jan. 1 contains a portrait of Dr. E. REGEL, together with an interesting sketch of his active and industrious career. Dr. REGEL is one of those who has passed through every stage of his profession, from a gardener's apprentice to the distinguished position he now occupies as Scientific Director of the Botanic Garden at St. Petersburg.

—— DR. PATERSON'S ORCHIDS.—The following Orchids were in flower last month in Dr. PATERSON'S collection at Bridge of Allan :—

Anæctochilus Dawsonii	Lælia superbiens
Angræcum sesquipedale	Limatodes rosea
Calanthe Veitchii	Lycaste Skinneri
,, vestita rubra oculata	Masdevallia ignea
Cattleya bulbosa	,, melanopus
,, Symeii	,, tovarensis
,, Trianæ	Maxillaria aurea flavo
,, Warscewiczii	,, picta
Coelo...	Neottia picta maculata
...m	Odontoglossum Alexandræ
	... Bictoniense

soil made use of. Excellent advice ; but only practicable, we fear, on a small scale. The mould is a species of Peronospora allied to that which produces the Potato disease.

—— ROYAL BOTANIC SOCIETY.—At a meeting of this Society held last Saturday, Mr. GEORGE J. SYMONS, F.R.S., in the chair, the following letter from General PONSONBY was read :—

"Osborne, January 17.

"Sir,—I have had the honour of laying before the QUEEN the address of condolence transmitted by you Her Majesty, who sincerely appreciates this mark of sympathy, has commanded me to request that you will convey to his Serene Highness the Duke of TECK, and to the Vice-Presidents and members of the Council of the Royal Botanic Society, the QUEEN'S heartfelt thanks for their kind and feeling expression of condolence with Her Majesty in her sorrow.—I have, &c.

(Signed), "HENRY F. PONSONBY.

"To W. SOWERBY, Esq."

Mr. SYMONS, in reviewing the meteorological register kept in the Society's gardens, remarked that the temperature of the Regent's Park was generally colder than that of the surrounding neighbourhood ; but, although the temperature of the last eight or nine weeks had not been exceptionally low, the continuance of even a slight frost steadily for so long a period was remarkable, and not common in London and its vicinity.

—— DESTRUCTION OF YOUNG WOOD BY HARES.—Mr. REID, of Wick, writing to *Land and Water*, states that during the late snowstorm much damage has been done to the young plantings along the Caithness and Sutherland Railway line. The mountain or varying hare (Lepus variabilis) came down from the hills in great numbers, and barked all the young trees along the line for a considerable distance, or at least as many of them as showed themselves above the snow. These trees were planted by order of the Duke of SUTHERLAND, and were thriving so well that it was believed that in the course of a few years longer they would be of considerable service in keeping off the snow-drift in that exposed district. It is much to be feared that many of the hitherto thriving plants will die in consequence of this rather unusual occurrence.

—— MANCHESTER ROYAL BOTANICAL AND HORTICULTURAL SOCIETY.—We have received a copy of the schedule of prizes—as liberal and comprehensive as heretofore—for the Annual Grand National Horticultural Exhibition to be held in the gardens at Old Trafford from May 30 to June 6 inclusive.

—— THE MISTLETO AND MOUNTAIN ASH.—In the gardens at Dangstein some young trees of the Mountain Ash present a very novel and striking appearance by the stems being covered with numerous plants of Mistleto in various stages of growth. This has been brought about by simply making slight incisions in the bark and inserting in each a matured

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April 6 1880

LARGE LIVE OAKS.

BY W. ST. J. MAZYCK, HAGLEY PLACE, S. C.

Neither of the five live oaks, Q. virens, of which I write, are as large as the Cawthorpe Yorkshire oak, mentioned in your January number, but they are very respectable sticks of timber nevertheless. At Old Town plantation, on the west bank of the Ashley river, the site of Charleston, which was abandoned about 1680 for Oyster Point, there stands a live oak that measures thirty-two feet in circumference. One side of this tree was injured many years ago by fire. It must have been a big tree when the Indians burnt the town.

At Peach-tree plantation, on the west bank of the South Santee, there is a live oak that measures twenty-nine feet around, the first limb measuring sixteen feet around, and extending seventy-five feet. At midday it shades half an acre of ground. Prof. M. Numey said it was probably the finest tree this side of the Mississippi river, and that it was worth a man's time and money to come from Canada to see it,—rather an expensive trip in 1846 when he saw this tree.

At Weehonoka plantation, on the east bank of the Waccamaw river, three live oaks grow near each other. The first one measures twenty feet, the second seventeen feet nine inches, and the third fifteen feet around. These trees were all measured in the smallest part; all of them have the hour-glass shape to a greater or lesser degree. Not far from these last trees there is a common fox grape-vine, that measures four feet and two inches round.

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note: "I amused myself on one of those recent cold days by roasting some sweet potatoes in hot ashes—roots that I bought from Mr. Garcia, in Covent Garden. I mean the Sweet Potato of North America, which is so good when roasted or baked. For the first time I found that these Covent Garden specimens turned out very well. The sweet potato is an excellent vegetable, and I should advise our American friends to send us quantities of well-ripened roots, and also tell us how to cook them. I noticed in America, that just as with our common Potato at home, there are wet and dry tubers, mainly owing to differences of soil. I understand those grown in the sandy soils of the South are much better in America than those raised elsewhere. It seemed to be a greater favorite than the common potato, which was there called the Irish Potato to distinguish it from this one. I believe it to be more nutritious than the common potato, and when good it turns out something between a sweetmeat and a vegetable. To import a vegetable which our climate prevents us growing, and which in consequence is a novelty to most people, is very desirable. I do not know if their price is high in America, but it would be a great boon if they could be sent here in such quantities as would allow of their being used as food. At present they are merely Covent Garden curiosities."

PROHIBITING THE IMPORTATION OF LIVING PLANTS.—For fear of introducing the Phylloxera, the government of the Cape of Good Hope, have absurdly prohibited the importation of living plants and bulbs of all kinds. This is on a par with much of our own legislation on hor-

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MISSOURI BOTANICAL GARDEN
P-131

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New Garden Plants.

QUERCUS GLANDULIFERA, *Blume*.*

This is a hardy evergreen Oak, extensively planted at Kew, and known in many nurseries as Q. austriaca hybrida. It is a handsome free-growing species, the correct nomenclature of which has been a matter of uncertainty till the present year, when it has fruited freely at Kew, a circumstance which enabled Mr. Rolfe of the Kew herbarium to identify the tree with Blume's species above-named, an identification confirmed by Sir Joseph Hooker and assented to by M. de Candolle, the latter of whom monographed the Oaks in the *Prodromus*.

As grown at Kew, the Oak in question after some twelve to fifteen years' growth forms a compact bush of more or less pyramidal habit. The leaves are evergreen, the short stalks and midribs clothed (like the young slender shoots) with rather dense, short-spreading, brownish, stellate grey hairs, elsewhere glabrous, more or less glaucous beneath, oblong-obtuse, rounded at the base, coarsely and remotely toothed, the teeth sometimes glandular at the tips, primary veins 5—7, remote. Stipules long, awl-shaped. Buds ovoid-acute. Bud-scales cinnamon-brown, ovate-obtuse, ciliate at the margins. Male flowers —. Acorns 3—6, ripening in the first year, clustered on the ends of short stout stalks, about one-quarter the length of the leaves, each rather less than 1 inch long, elliptic-acute, with three abortive ovules at the base and one ripe seed; cup hemispherical, of numerous appressed, oblong-obtuse, ciliolate scales.

As in the case of most Oaks, the foliage and other characters are variable. The present species is a native of Japan, and specimens exist in herbaria from most of the botanical travellers in that country. The introduction of the plant to Kew is supposed to be due to the late Mr. Oldham. *M. T. M.*

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CARTE
VEGETABLE NOV
For 1881.

NOTE.—All these Novelties have re
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PEA—Carter's Stratagem.

The only Pea certificated by the Ro
tural Society in 1879.
Retail price, in sealed packets, 5*s.* per p

PEA—Carter's Telephone.

Awarded the First-class Certificate
Horticultural Society, 1878.
Retail price, in sealed packets, 3*s.* 6*d.* pe

PEA—Carter's Pride of the Marl

A superb new Dwarf Pea for Garden or
Retail price, in sealed packets, 3*s.* 6*d.* per

PEA—Culverwell's Telegraph.

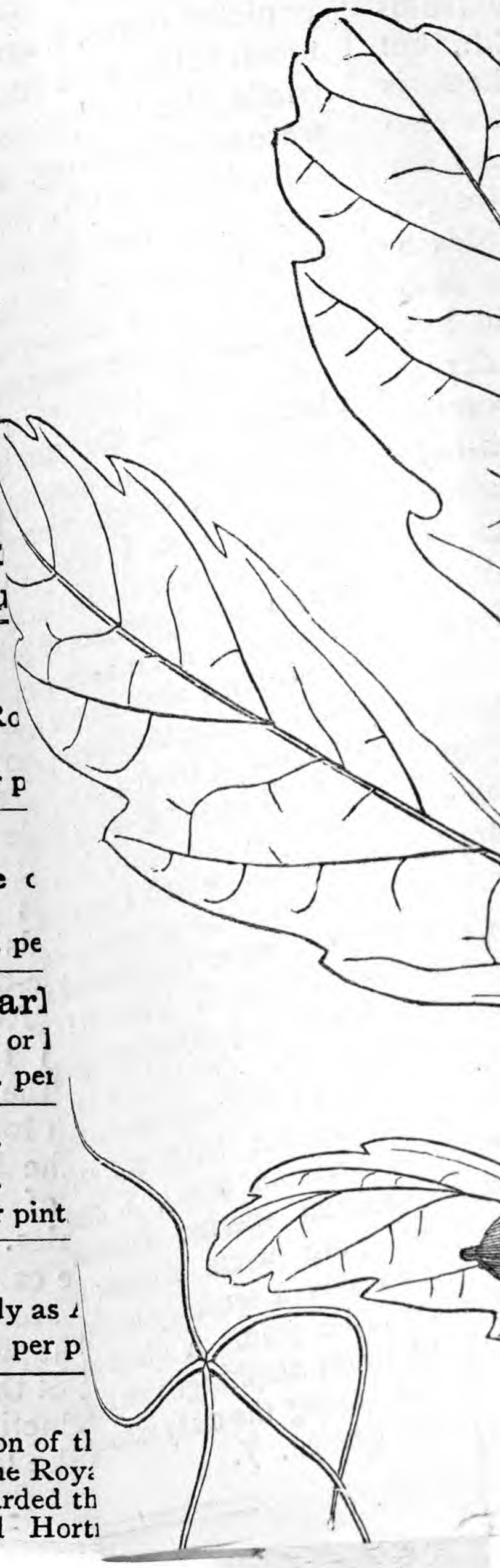
An indispensable exhibition variety.
Retail price, in sealed packets, 2*s.* per pint

PEA—Carter's Little Wonder.

A Dwarf Wrinkled Marrow, as early as
Retail price, in sealed packets, 2*s.* 6*d.* per p

MELON—Blenheim Orange.

Awarded First Prize in a competition of t
varieties at the June Show of the Roy
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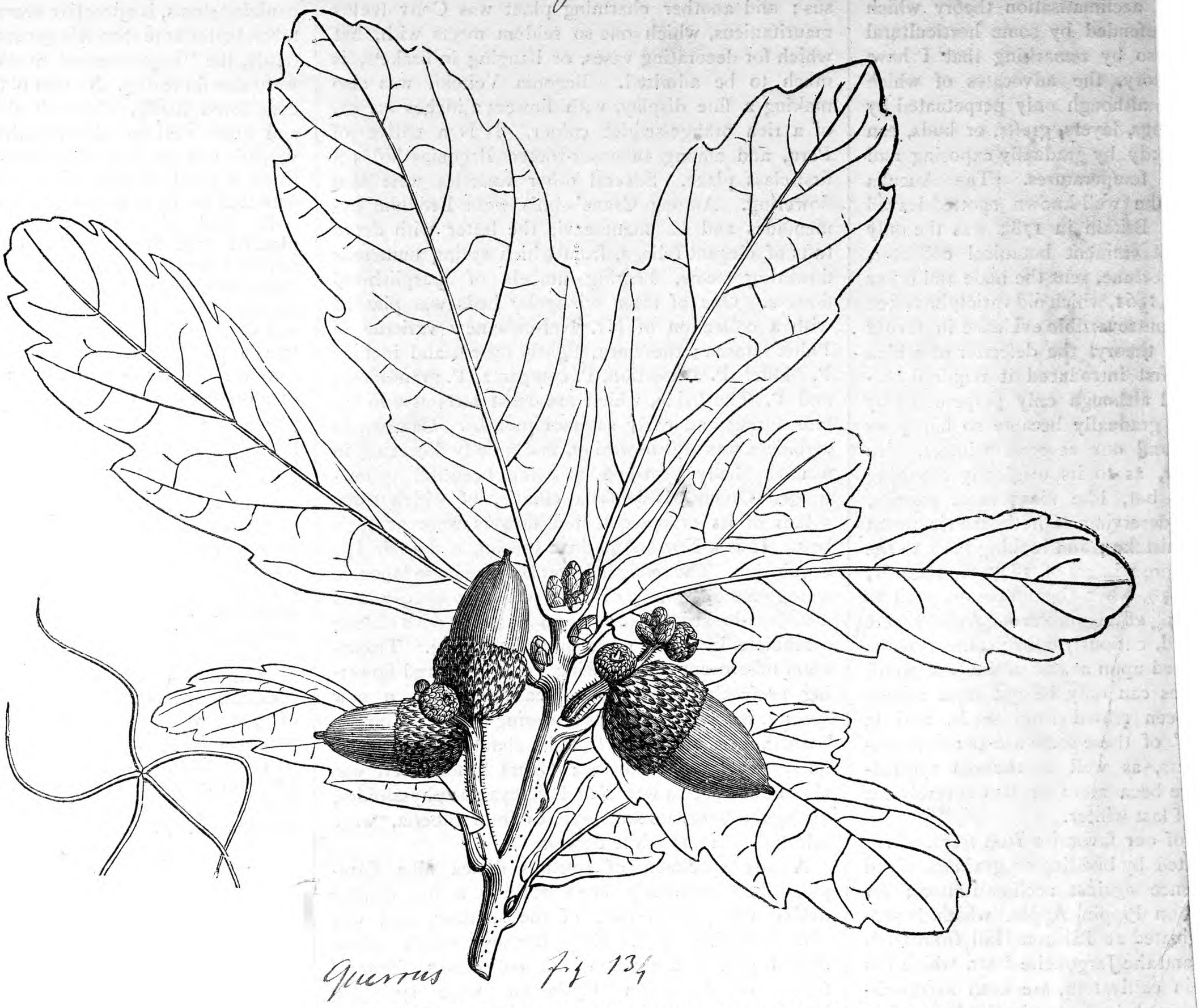
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Gard. Chron Dec 4 1880



Quercus Fig 134

GLANDULIFERA, A HARDY EVERGREEN OAK FROM JAPAN. (SEE P. 714.)

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of our favourite fruit trees, which
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ston Pippin Apple, which is sup-
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and the Jargonelle Pear, which has
in cultivation, are both as unsuit-
as standards in Scotland as when
ied; while the Moorpark Apricot,

nating with flowers of a reddish-purple.

Two small circular beds were dotted over with the flowers of Crocus multiflorus and C. speciosus; and another charming plant was Convolvulus mauritanicus, which one so seldom meets with, but which for decorating vases, or hanging in baskets, is much to be admired. Begonia Veitchii was also making a fine display, with flowers 2 inches across, of a rich orange-scarlet colour. It is a native of Peru, and among tuberous-rooted Begonias holds a first-class place. Several other varieties were also flowering. Among Crane's-bills were Erodium hymenoides and E. manescavi, the latter with dense tufts of elegant foliage, from which spring numerous flowering stems, bearing umbels of purplish-red flowers. One of three triangular beds was planted with a collection of Mr. Nelson's new varieties of Phlox setacea; these are slightly raised, and include P. Model, P. Perfection, P. compacta, P. grandiflora, and P. The Bride, which are most attractive in the late spring and early summer months. Campanula turbinata was still flowering, and quietly flowering in a most shady peat-bed was the beautiful yellow-fringed Orchis, Habenaria ciliaris, of which three spikes of its orange-coloured flowers were at their best. It is a North American species, and a decided acquisition. The reddish flowers of Anemone japonica were making a goodly display. Othonna cheirifolia is a curious-looking species from Barbary, with oblong spathulate leaves of a bluish glaucous hue. Tropæolum tuberosum was growing vigorously, and flowering profusely; Delphinium cashmirianum, a new species, was just passing its flowering season; Chelone barbata was producing from its slender flower-stems its scarlet tubular flowers; Gaura Lindheimeri was also flowering, as was also Hyoscyamus physaloides, a singularly ornamental species from Siberia, with celestial-blue and white flowers.

A fine specimen of Lychnis dioica alba flore-pleno had evidently been making a fine display during the greater part of the summer, and was still flowering with that freeness which alone should give it a place in all collections. Several forms of European Cyclamen were springing into flower; the ever-welcome Androsace lanuginosa was still producing in abundance its rosy-coloured

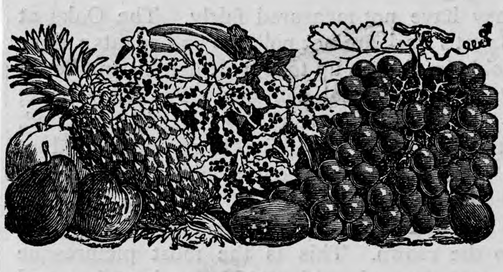
folium, with yellow flowers, is a distinct Crucifer, with neat attractive Fern-like foliage. Phygelius capensis, with scarlet tubular flowers borne on panicled stems, is attractive everywhere, but was doing much better here than it is generally seen. Cheiranthus tristis, the "night-scented Stock," and C. variabilis, were also flowering. Neither of these two can fairly be considered hardy, although they will flower freely, and grow well for nine months of the year. Adonis vernalis was in very fine clumps, and judging from these, a good display of its yellow flowers may be expected in the sunny days of early spring.

In cold pits, which for the most part are planted with the rarer bulbous plants, Croci of the different autumn-flowering species were just opening their buds, which represent a great variety of colour; among these I noted C. tingitanus, C. Spruneri, and C. zonatus. In this frame also I noted Iris cristata, a pretty species of North American origin, and introduced as far back as 1756; this is still uncommon in gardens, and should be grown largely. It is o dwarf habit; the flowers, which are of a pale lavender blue, rising from 4 to 6 inches in height. It is growing here in the greatest luxuriance. Another species named I. cretensis, is in habit closely allied to I ruthenica, which I am not familiar with.

Among Calceolarias, of which many species a grown, were Calceolaria hyssopifolia, C. bicolor, C crenatifolia, C. lobata and C. Pavonii; this latter a large and gross-feeding plant, requiring plenty moisture. Of Salvias there is almost an endle variety; the most noticeable are Salvia confertiflo of distinct habit and good flower; S. Pitche S. farinosa (syn.), S. leucantha, a white-flowe Mexican species. Loasa vulcanica was one m of pure white blossoms; it is of prickly hal and has a tendency to sting one's flesh and ca irritable pain. A whitish flowered variety of I phinium Staphisagria was also flowering. Such a few among the many interesting plants to be see this garden. *J.*

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THE

Gardeners' Chronicle.

SATURDAY, AUGUST 20, 1881.

THE OAK.

I SHALL not trouble the reader with a learned dissertation on the varieties of the Oak, intending to confine myself chiefly to the notice of remarkable trees which I have myself seen. The British Oak is indigenous to the country, and there are two distinct varieties—some botanists have called them species—namely, Quercus Robur var. pedunculata, and Q. R. var. sessiliflora. In the former the acorns are on fruit-stalks, in the latter they are sessile. Intermediate forms are common. Mr. Grigor says, in his *Arboriculture*, that the pedunculata is the more common tree both in natural and planted woods throughout Britain. I observed that the acorns of the Royal Oak at Boscobel, of the Cressage Oak near Shrewsbury, and of the Swilcar Lawn Oak in Needwood Forest are stalked.

The leaves of sessiliflora are long, the acorns in clusters of two or three; the timber is less close-grained and durable, and more liable to rot than that of the other sort. The inferior variety was, according to Mr. Rhind, introduced ages ago from the German forests, which consist chiefly of this species. It abounds in the New Forest and other parts of Hampshire, around London, in Norfolk and the Northern Counties. The inferiority of the imported species was unsuspected in English dockyards until the dry rot in our ships revealed it. The tree has the merit of growing more freely than the older British Oak, when young, particularly in poor soils and unfavourable situations.

The most remarkable specimens and plantations of Oaks I have seen are situated in and about Needwood Forest, which, like the Oak-growing Wealden, is not a superior clay for agricultural purposes, but well suited for the Oak. Bagot's Park, enclosed from Needwood at an unknown date, presented, with a little herd of goats, by Richard II. to the "Bagot" of Shakespeare, and now the property of Lord Bagot, his descendant, has a wonderful display of Oak trees. The Squitch Oak is its largest specimen, and was valued in its prime, some years ago, at 1012 cubic feet, or, in money, £240 12*s*. It measured 21 feet 9 inches round the trunk at 5 feet from the ground, which is very much less than some of the reported measurements of Oaks. Mr. Selby says, in one of the best books on its subject, his *British Forest Trees*, that the Squitch Oak "seems one of the largest, being upwards of 43 feet in circumference at the base." Not having measured the tree himself, Mr. Selby was obliged to say "seems," because these reported measurements are often taken at the ground, where the trunk of the Oak sometimes spreads amazingly. When the Mayor of a town in the Eastern Counties received the Prince of Wales, he made the most of the little town in driving His Royal Highness round. "Mr. Mayor," said the Prince, thinking he had seen one of the streets before, "are you not dodging me to and fro?" That is just what happens when people pretend to 40 feet or 50 feet girth for an Oak

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they have not measured fairly. The Oaks at Bagot's Park are not pollards and squats; their noble trunks run up to a great height, and hence their large cubical contents. The King Tree, which I partly measured and partly estimated, standing in the "cliffs," is 20 feet round at 5 feet, runs up without a limb 30 feet, and thence to the top 70 feet. That is a tall Oak. The trunk of the Beggar's Oak measures 33 feet to the crown. This is the most picturesque tree in the park, with a noble trunk 20 feet, and 27 feet in girth, measured fairly, or 68 feet if you measure round the spurs which buttress the tree all round, and project several feet above the surface of the ground which they clutch. The price offered for the King Tree in 1812 was £200 for the first length of the trunk at 12*s.* per foot, and £93 for the remainder, including bark at £14 per ton.

The Oak trees of this park are all of the best and oldest British breed, with stalked acorns; one among them has variegated leaves. There are 1000 acres of park, and 1300 acres of planted Oak outside the park. When the price was 6*s.* per foot, £100,000 worth of Oak timber might have been felled, it is said, without touching the ornamental timber; so the noble owners, notwithstanding their residence is several miles distant, have incurred no small sacrifice for the sake of their timber.

I mentioned the poor soil. A wretched patch of lias clay soil overspreads the high ground here, a remnant of a larger area. It is a poor yellow or slate-coloured clay, which could not be farmed profitably just now. Owners of similar soils, as yet unplanted, will, perhaps, take the hint.

I made a special pilgrimage, when staying in the district, to visit that tall and sturdy patriarch of Needwood Forest, the Swilcar Lawn Oak. It stands on the highest ground of the neighbourhood, measuring 27 feet round at 5 feet, and towering to a great height. This old Oak—larger, stronger, and possessing more vitality than its neighbours—reminds me of a constitutionally tough family living on the spot. An old deer stealer, who plied his trade here before the enclosure, lived to the age of a hundred; his son mowed the grass round the Swilcar Lawn Oak at eighty-eight, and died at ninety of his epidemic; and his grandson seems in for a very long innings, too. Mr. Mundy, of Eland Lodge, who rode after his hounds in green through the glades of Needwood, and published a poem, called the *Fall of Needwood*, in 1808, about the time of the enclosure practically, named the Swilcar Lawn Oak the forest's "chief mourner." There was much which a poet might mourn who kept hounds, for the forest in its pristine state was a picturesque maze of great Oaks and other forest trees, of Hollies, Thorns, and underwood. There were 10,000 acres full of deer and other game, with any amount of poaching on the part of the "ancient cottagers" on the spot, and of people from the adjacent villages. Originally the forest had its customary officers—a lieutenant, rangers, axe-bearers, keepers, and woodmote court; it had five wards, including those of Uttoxeter and Tutbury, and four lodges, the residences of the keepers. These are now good country houses, leased from the Crown, and around them are parks which form specimens on a small scale of what the forest once was. One of these was occupied by Mr. Mundy, the poet who rode in green, and the ancestor, I believe, of the owner of the Royal Agricultural Society's 1st prize dairy farm of the present year. Yoxal Lodge was occupied by Mr. Gisborne, author of agricultural articles in the *Quarterly Review*. *A Traveller.*

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GEORGE ENGELMANN

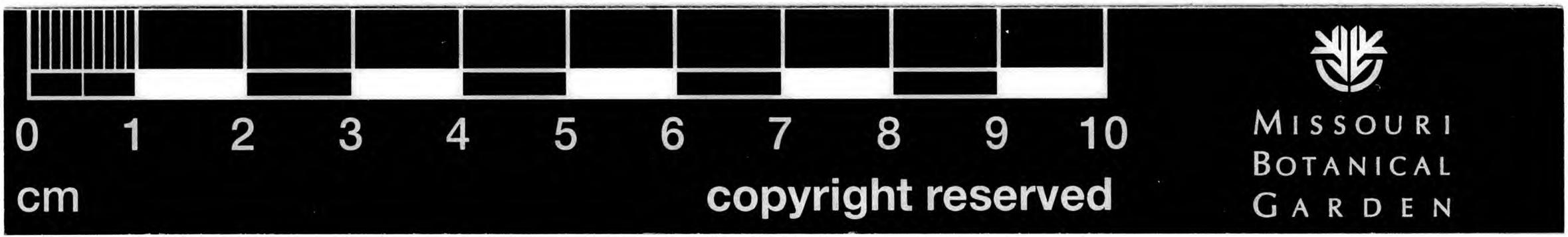
THE PHYLLOXERA.—M. Planchon, in presiding over the Phylloxera Congress at Montbrison, alluding to the unnecessary restrictions placed on the transport of Vines, and stated that cuttings of the young wood without any heel of the old wood might be sent from place to place without danger, and still less danger attended the transport of the seeds.

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Bot. Gazette
Jan 1892

Autumn Color of the Bartram Oak.—It may be of interest to note that the autumn leaves of *Quercus heterophylla* color like the scarlet *Q. coccinea*. The early leaves of the season are more or less entire, but when the plants are growing freely, and make a secondary growth, as vigorous oaks often do, the later leaves much resemble *Quercus coccinea*. Indeed, when mixed it is difficult to separate them. I think with Martindale it is a good species, and that its relationship is with the Scarlet and Black oak.—THOMAS MEEHAN.

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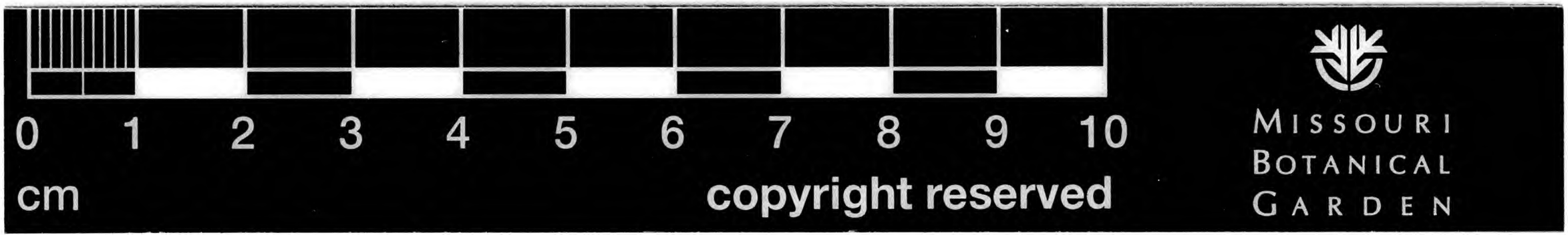


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...high mounds under the trees, and often are scattered about for many rods. Any of these spines is strong enough to pierce through a cowhide boot-leg; and when it reaches the flesh you are gone. The retrorse barbs cause it to continue entering the more you struggle. The best thing to do is to break it off at once where you can, and let the rest fester and come away with the pus.

"Almost as cruel are the bushes of an acacia, appropriately called "cats's-claws," that crowd in the trail, and reach their slender limbs across the way, armed every half inch with pairs of strong, recurved thorns, that tap your veins unawares, and cause you to add drops of blood to the perspir...

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS



oldest and finest specimens are to be found in this

Gard. Chron Feb 24 1883

Pyramidal Oaks.—I have been much interested in the illustration and description of the pyramidal Oak given at p. 179, and wonder if the tree that is growing in these grounds is the lost one your correspondent speaks of. The specimen growing here is somewhat more compact than that shown in your illustration, and does not branch out so much at the top. Its height is 75 feet, and its girth at 3 feet from the ground is 6 feet. It was planted probably about eighty or ninety years since by the then Marquis of Blandford, and great-grandfather of the present Duke of Marlborough, whose great talent for landscape gardening raised Whiteknights Park to such a high position among the gardens of that day. The tree growing in these grounds, which I have had charge of for upwards of twenty years, has ripened a few acorns once only in that time, which was, I think, in 1867. I collected what few there were, and sowed them; the result was, that about a dozen came up; the largest of them are now from 6 to 10 feet high, and are pretty much the same in habit as the parent tree. The specimen growing here has 4 feet of clear stem, from whence it branches out, and forms a perfect pyramid. *W. Lees, Wilderness, Reading.* [There is a fine specimen, but not so high as that mentioned, in the nursery of Messrs. Kinmont & Kidd, at Canterbury. ED.]



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Public Gardens and Plantations, Jam
development of Cacao plantations in
After some introductory pages devoted to
and description of the plant, Mr. Morris
once into the practical part of his subject—
tion of land, raising plants from seed,
gathering and preparing the crop, basing h
ments upon information acquired in the is
Trinidad. The cultivation seems to be of
character, shade and shelter from wind being of
importance, while the conditions in the mo
valleys of Jamaica are so favourable for its cultiva
that the promise for the future is very satisfactory



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A PYRAMIDAL OAK.

PYRAMIDAL OAKS are not common in England. Why not? I do not know the reason, but perhaps it is because they are not enough known. They are very ornamental trees, in habit resembling Lombardy Poplars, but surpassing them much in point of beauty. They are rather common in German gardens, but the oldest and finest specimens are to be found in this park, and I hope the illustration of the tallest one, shown in its winter state (fig. 26), will gain them many friends.

The oldest pyramidal Oak, a natural sport, is standing in a forest near Babenhausen, in North Bavaria. Efforts were made to propagate the tree by grafting, and three young plants resulted. One of them came to Wörlitz, and another one was planted here. It is not known where the third one is. The Oak in Wörlitz soon perished; of the third one nothing has been heard, and it also may be dead, so this park. This is the parent tree, or, as we Germans say, the mother tree of all the pyramidal Oaks found in gardens. We have several specimens here in height not much behind the parent tree, but in point of beauty not one can rival it. The tree is now about 100 years old and just 100 feet high—the same height, in fact, as the pyramidal Oak near Babenhausen. The circumference of the stem at 3 feet above-ground is 8 feet 6 inches. *C. Wissenbach, Royal Gardens, Wilhelmshöhe, near Cassel.*

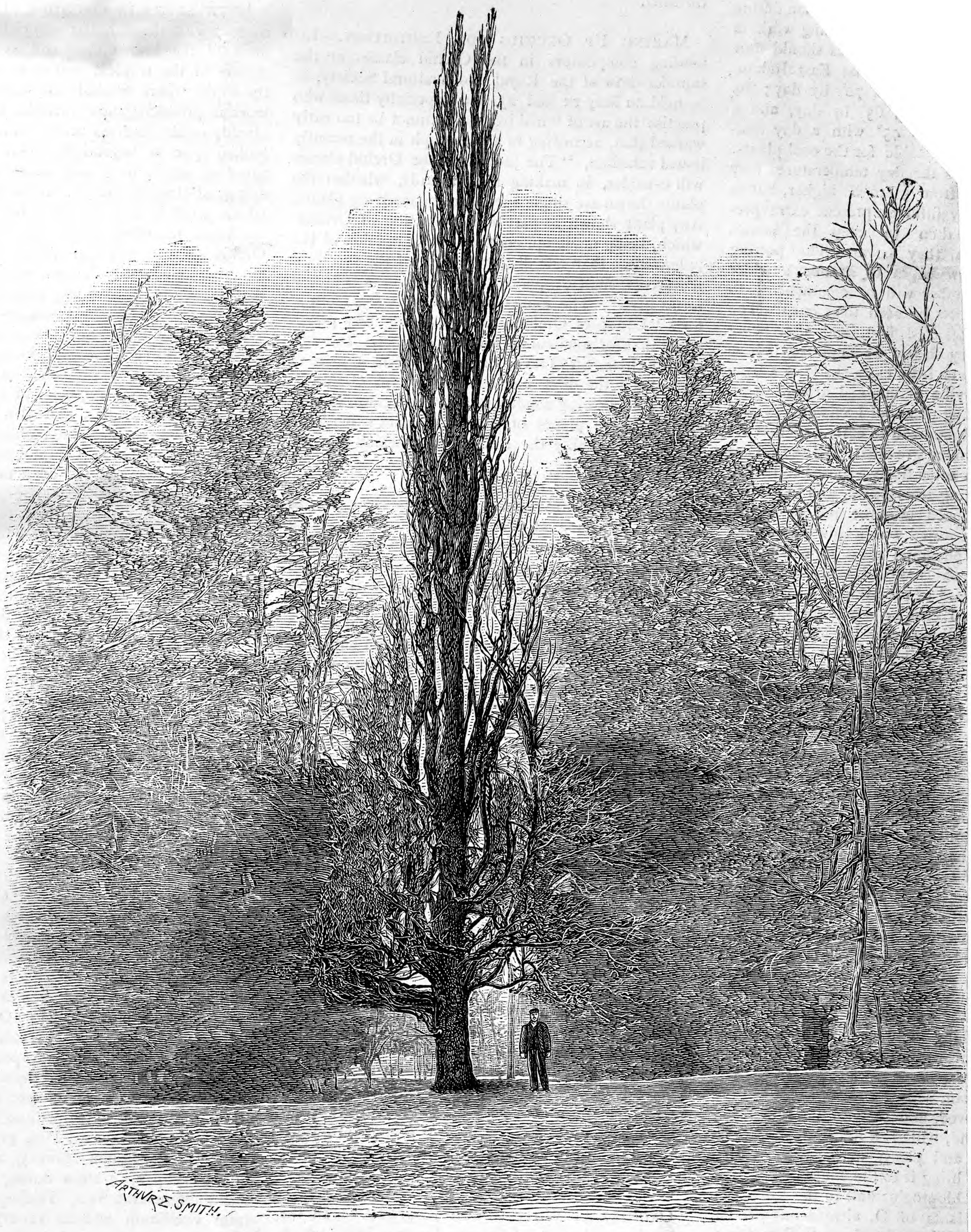


FIG. 26.—PYRAMIDAL OAK IN THE PARK AT WILHELMSHÖHE.

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MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

this plant no effort should be spared to get rid of them at once, or they will soon spoil the appearance and seriously affect the future well-being of the plants. The method we adopt to get rid of them is to run a feather or soft brush between the leaves at intervals of a few days. It is necessary to be careful in watering this plant so that no moisture settles among the young foliage, as decay will quickly set in, which is difficult to arrest when once it commences. A regular and steady moisture should be kept at the roots of the plants, as an excess of either drought or moisture maintained for any length of time will soon show on this plant. *J. Roberts, Gunnersbury Park Gardens.*

MAKING UP ORCHIDS FOR EXHIBITION.—Intending competitors in the Orchid classes at the summer show of the Royal Horticultural Society, to be held on May 22 and 23, and especially those who practise the art of "making up," cannot be too early warned that, according to a paragraph in the recently issued schedule, "The judges in the Orchid classes will consider, in making their awards, whether the plants shown are single specimens or made-up plants. Any plant shown as part of a collection of Orchids which, being made-up, contains in the opinion of the judges more than one distinct variety of the species it represents, shall disqualify the collection of which it forms part." The nurserymen's class at this show is for a "Group of Orchids, not exceeding fifty pots," while that for amateurs is for ten, distinct. In addition to these, Sir Trevor Lawrence offers a prize of £10 "for the best collection of exotic Orchids," under the following conditions:—"Collections to consist of twelve plants of distinct species; made-up plants to disqualify the collection in which they are shown."

LÆLIA CRAWSHAYANA.—Among the many Lælias that are flowering at this season of the year none perhaps are so welcome as this rare and fine species. It has been in flower with us upwards of a week, and it is quite distinct from anything else that I have hitherto seen. It seems to me to be related to L. anceps and L. autumnalis, but in itself very distinct; the bulb and leaf partake very much of the nature of L. autumnalis; the lip also, in that the lobes do not cover the column, which is the case in those of L. anceps, while the markings again are similar to the latter, differing only in that the patch of yellow is more developed and much deeper in colour. The sepals and petals are of a deep purplish hue, but not lengthened so much as those of L. anceps, and it is undoubtedly far superior to any of its congeners. The finest varieties of L. anceps and L. autumnalis that I ever saw are nowhere in comparison to it for coloration. Any one may well be proud of it if fortunate enough to possess it. The plant has been grown on a block in the intermediate-house, in company with plants of Lælia anceps. It is to be regretted that such a fine species is still so uncommon amongst us. *W. Gostling, Sudbury House.*

ODONTOGLOSSUM CRISPUM.—One of the finest varieties, if not the finest, we ever saw, was shown us a few days since by Mr. Stevens. The individual flowers measured over 4 inches in diameter, the sepals and petals were very broad, white, flushed with rose, but without spots, the lip richly spotted. The specimen came from the garden of C. Walker, Esq., Bretborgh Holt, Milnthorpe, and is to be photographed life-size by Mr. Stevens.

ORCHIDS AT WHITCHURCH RECTORY. — In the extensive collection of Odontoglossums here, which fill four good-sized houses, there are a large number in bloom, amongst which are many of unusual excellence in the crispum section, ranging from the a straw-coloured ground, the former heavily barred with light brown, the petals spotted with the same colour, base of lip bright yellow. Of the O. Andersonianum type there is one superior to any we have met with, the magenta marking on the interior portion of the petals brighter and more decided than ordinary, the flowers large, and the individual parts of unusual breadth. Amongst other cool species in the same collection Lycaste Skinneri is exhibiting its ever-varying character in shade and marking, from those that are of the darkest hue to the pure white form, of which there is one example that produces flowers of enormous size.

ENTHUSIASTS IN ORCHID CULTURE are not now content with the rich harvest yielded by ransacking most of the known, as well as all but unknown regions of the tropical and more temperate parts of the world where Orchids are found, but they set to work in producing new varieties by hybridising with already results such as at one time would have been looked upon as beyond the reach of probability; in proof of which it is only necessary to mention the doings of Dominy, Seden, Mitchell, Swan and others, whose work in this direction has produced some of the most beautiful plants that now go to fill our Orchid-houses; but it is evident from what has been done, as well as what has not yet been accomplished, that some divisions of the Orchid family are much more amenable to intercrossing under cultivation than others are. The Cypripediums evidently are amongst the most willing to answer to the hand of the hybridist, as shown by the host of hybrid seedlings that have made their appearance; of Cattleyas, and their near allies the Lælias, and also the Dendrobiums, there is ample proof of their crossing freely. In the cool section, such as Odontoglossums and Masdevallias, there has not yet been much done so far as completed work goes—completed, we repeat, for the process of Orchid raising, from fertilising the flowers to growing the plants up to a blooming state, is in most cases a slow and patience-trying operation—a very different affair from the raising of many other kinds of plants—consequently there is no knowing how much of this kind of work there is going on, or how much has been attempted that has failed. Of the latter—that is, the failures—it is more than likely that there is uncertainty as to the cause. Such genera as the Masdevallias and Odontoglots to all appearance produce seed freely when the flowers have been crossed by hand, as shown by the way in which the pods swell off and ripen; but whether the seeds are wanting in fertility, or they perish after being sown through something that is wanting to enable their germinating, does not seem to be yet known; not unlikely the treatment of the seed will ultimately turn out to be at fault.

ORCHIDS FOR CUTTING.—"Cœlogyne," at p. 82, makes inquiries respecting Orchids for cutting that would be likely to succeed under temperatures ranging from 45° to 55° and 55° to 65° respectively. For cool treatment the following are likely to give satisfaction, and have large highly-coloured or otherwise attractive flowers to recommend them:—Odontoglossum Alexandræ and its varieties, Pescatorei, Bluntii, and cirrhosum, have white flowers, spotted with brown or purple, and O. Hallii is heavily marked with a chocolate colour. Barkeria spectabilis, Lycaste Skinneri and varieties, Cypripedium insigne, Masdevallia Lindeni and tovarensis, Disa grandiflora, Cœlogyne cristata, Zygopetalum Mackayi, and Maxillaria grandiflora, keep up a show during winter and spring. Oncidium macranthum, Trichopilia suavis, Epidendrum vitellinum and its variety majus will bloom chiefly in summer; and Lælia autumnalis, anceps, Perrinii, and elegans from autumn onwards to winter. These, especially the two latter, should be placed at the warm end of the house. In the higher temperature numerous beautiful and varied Dendrobiums may be grown, as D. densiflorum, D. formosum giganteum, nobile, Cambridgeanum, Dalhousieanum, and Farmeri. These require the warmer parts of the house. Cypripedium barbatum and variety superbum, Angræcum eburneum, with long racemes of green and white flowers, Limatodes rosea, Calanthe vestita and varieties, C. Veitchii, and Oncidium crispum will give variety during the winter months. Trichosma suavis and Epidendrum bicornutum ought not to be omitted, on account of their fragrance. Some of the

that there only remains one of the three trees, that in

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